

Communication:

4. Describe in words the steps you follow to factor $2x^2 - 8x - 10$. [C: 4]

① Factor the greatest common factor, 2.

See
Answer
Key.

$$\text{GCF} = 2$$

$$2x^2 - 8x - 10$$

$$= 2(x^2 - 4x - 5)$$

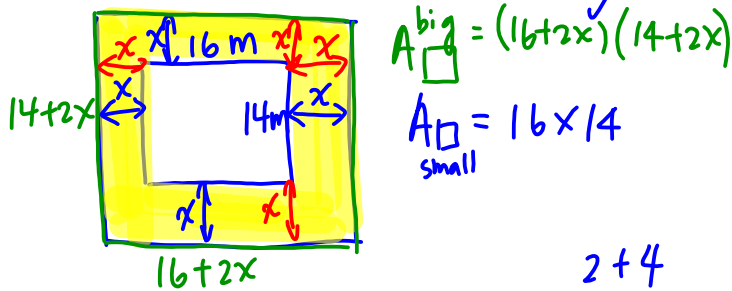
$$= 2(x-5)(x+1)$$

x^2	-5
x	-5
x	1
②	-4

Thinking:

8. A rectangular garden with dimensions 16 m by 14 m is surrounded by a paved border of uniform width, x .

(a) Draw and label a diagram to represent the garden and the border. [T: 2]



(b) Write a simplified expression for the area of the border. [T: 6]

$$A_{\text{big}} - A_{\text{small}}$$

$$= (16+2x)(14+2x) - (16 \times 14)$$

$$= 224 + 32x + 28x + 4x^2 - 224$$

$$= 4x^2 + 60x$$

\therefore The area of the border is $4x^2 + 60x$.

(c) If the area of the border is 216 m^2 , find the width of the border. [T: 4]

$$4x^2 + 60x = 216$$

$$4x^2 + 60x - 216 = 0$$

$$4(x^2 + 15x - 54) = 0$$

$$4(x-3)(x+18) = 0$$

$$x-3=0 \text{ or } x+18=0$$

$$x=3 \text{ or } x=-18$$

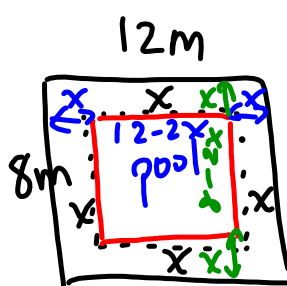
$x=-18$ (rejected)

\therefore The width is 3 m.

$x=?$
 GCF = 4

x^2	-54
x	-3
x	18

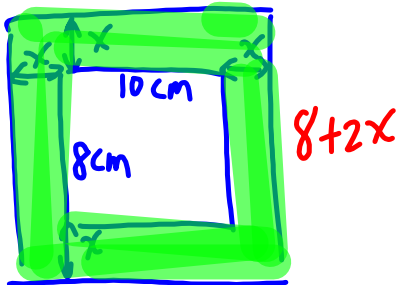
 1×54
 2×27
 -3×18
 6×9
 ~~7×8~~



Area of border = ?

$$\text{Area} = \underbrace{(12 \times 8)}_{\text{big } \square} - \underbrace{(12-2x)(8-2x)}_{\text{small } \square}$$

9. A picture that measures 10 cm by 8 cm is to be surrounded by a mat before being framed. The width of the mat is to be the same on all 4 sides of the picture. What is the width of the mat if the total area of the picture and the mat is to be 168 cm^2 ? [T: 8] $x = ?$



$$10+2x$$

$$(10+2x)(8+2x) = 168$$

$$80 + 20x + 16x + 4x^2 = 168$$

$$80 + 36x + 4x^2 = 168$$

$$80 + 36x + 4x^2 - 168 = 0$$

$$4x^2 + 36x - 88 = 0$$

$$4(x^2 + 9x - 22) = 0$$

$$4(x+11)(x-2) = 0$$

$$x+11=0 \quad \text{or} \quad x-2=0$$

$$x = -11 \quad \text{or} \quad x = 2$$

(rejected)

$$\therefore x > 0$$

$$\text{GCF} = 4$$

$$\begin{array}{r|l} x^2 & -22 \\ \hline x & 11 \\ x & -2 \\ \hline & +9 \end{array}$$

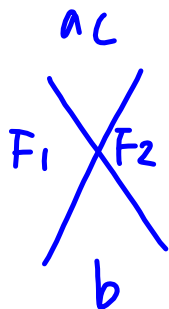
$$+11x-2$$

\therefore The width of the border is 2 cm.

#3

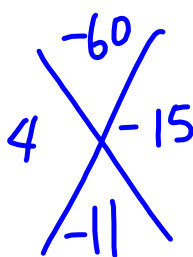
(d) $6x^2 - 11x - 10$ [K:2]

$= (3x+2)(2x-5)$



1st	F2
F1	last

2x - 5



3x	6x ² - 15x
2	4x - 10

$-1x+60$

$-2x+30$

$3x+20$

$+4x-15$

5×12

6×10

7, 8, 9

Negative C
subtract
↓
11